

Amendments to the Claims

Please amend Claims 3-14. Please add new Claims 20 and 21. The Claim Listing below will replace all prior versions of the claims in the application:

Claim Listing

1. (Original) A method of distinguishing between rice varieties, comprising the following steps (a) and (b):
 - (a) determining the type of a nucleotide at a position according to any of the following (1) to (28) in the rice genome, or a nucleotide on the complementary strand that composes a base pair with the nucleotide at the position:
 - (1) position 593 in the nucleotide sequence of SEQ ID NO: 1,
 - (2) position 304 in the nucleotide sequence of SEQ ID NO: 2,
 - (3) position 450 in the nucleotide sequence of SEQ ID NO: 3,
 - (4) position 377 in the nucleotide sequence of SEQ ID NO: 4,
 - (5) position 163 in the nucleotide sequence of SEQ ID NO: 5,
 - (6) position 164 in the nucleotide sequence of SEQ ID NO: 6,
 - (7) position 534 in the nucleotide sequence of SEQ ID NO: 7,
 - (8) position 358 in the nucleotide sequence of SEQ ID NO: 8,
 - (9) position 475 in the nucleotide sequence of SEQ ID NO: 9,
 - (10) position 323 in the nucleotide sequence of SEQ ID NO: 10,
 - (11) position 612 in the nucleotide sequence of SEQ ID NO: 11,
 - (12) position 765 in the nucleotide sequence of SEQ ID NO: 12,
 - (13) position 571 in the nucleotide sequence of SEQ ID NO: 13,
 - (14) position 660 in the nucleotide sequence of SEQ ID NO: 14,
 - (15) position 223 in the nucleotide sequence of SEQ ID NO: 15,
 - (16) position 247 in the nucleotide sequence of SEQ ID NO: 16,
 - (17) position 163 in the nucleotide sequence of SEQ ID NO: 17,
 - (18) position 421 in the nucleotide sequence of SEQ ID NO: 18,
 - (19) position 178 in the nucleotide sequence of SEQ ID NO: 19,
 - (20) position 141 in the nucleotide sequence of SEQ ID NO: 20,
 - (22) position 480 in the nucleotide sequence of SEQ ID NO: 21,
 - (22) position 481 in the nucleotide sequence of SEQ ID NO: 22,

- (23) position 131 in the nucleotide sequence of SEQ ID NO: 23,
 - (24) position 510 in the nucleotide sequence of SEQ ID NO: 24,
 - (25) position 248 in the nucleotide sequence of SEQ ID NO: 25,
 - (26) position 92 in the nucleotide sequence of SEQ ID NO: 26,
 - (27) position 743 in the nucleotide sequence of SEQ ID NO: 27, and
 - (28) position 552 in the nucleotide sequence of SEQ ID NO: 28, and
 - (b) relating the type of the nucleotide determined in step (a) to a variety of rice.
2. (Original) The method of claim 1, which distinguishes the type of a nucleotide by using a polymorphic marker characterized by a mutation of any of the following (1) to (28) in the rice genome:
- (1) the nucleotide at position 593 in the nucleotide sequence of SEQ ID NO: 1 is T,
 - (2) the nucleotide at position 304 in the nucleotide sequence of SEQ ID NO: 2 is T,
 - (3) the nucleotide at position 450 in the nucleotide sequence of SEQ ID NO: 3 is A,
 - (4) the nucleotide at position 377 in the nucleotide sequence of SEQ ID NO: 4 is C,
 - (5) the nucleotide at position 163 in the nucleotide sequence of SEQ ID NO: 5 is C,
 - (6) the nucleotide at position 624 in the nucleotide sequence of SEQ ID NO: 6 is C,
 - (7) the nucleotide at position 534 in the nucleotide sequence of SEQ ID NO: 7 is C,
 - (8) the nucleotide at position 358 in the nucleotide sequence of SEQ ID NO: 8 is G,
 - (9) the nucleotide at position 475 in the nucleotide sequence of SEQ ID NO: 9 is G,
 - (10) the nucleotide at position 323 in the nucleotide sequence of SEQ ID NO: 10 is A,

- (11) the nucleotide at position 612 in the nucleotide sequence of SEQ ID NO: 11 is A,
- (12) the nucleotide at position 765 in the nucleotide sequence of SEQ ID NO: 12 is T,
- (13) the nucleotide at position 571 in the nucleotide sequence of SEQ ID NO: 13 is T,
- (14) the nucleotide at position 660 in the nucleotide sequence of SEQ ID NO: 14 is G,
- (15) the nucleotide at position 223 in the nucleotide sequence of SEQ ID NO: 15 is A,
- (16) the nucleotide at position 247 in the nucleotide sequence of SEQ ID NO: 16 is A,
- (17) the nucleotide at position 163 in the nucleotide sequence of SEQ ID NO: 17 is A,
- (18) the nucleotide at position 421 in the nucleotide sequence of SEQ ID NO: 18 is C,
- (19) the nucleotide at position 178 in the nucleotide sequence of SEQ ID NO: 19 is G,
- (20) the nucleotide at position 141 in the nucleotide sequence of SEQ ID NO: 20 is G,
- (21) the nucleotide at position 480 in the nucleotide sequence of SEQ ID NO: 21 is C,
- (22) the nucleotide at position 481 in the nucleotide sequence of SEQ ID NO: 22 is C,
- (23) the nucleotide at position 131 in the nucleotide sequence of SEQ ID NO: 23 is C,
- (24) the nucleotide at position 510 in the nucleotide sequence of SEQ ID NO: 24 is A,
- (25) the nucleotide at position 248 in the nucleotide sequence of SEQ ID NO: 25 is T,
- (26) the nucleotide at position 92 in the nucleotide sequence of SEQ ID NO: 26 is C,

(27) the nucleotide at position 743 in the nucleotide sequence of SEQ ID NO: 27 is G, and

(28) the nucleotide at position 552 in the nucleotide sequence of SEQ ID NO: 28 is T.

3. (Currently amended) The method of claim 1 ~~or 2~~, comprising the following steps (a) to (c):
 - (a) preparing DNA from a test rice,
 - (b) amplifying a DNA comprising a nucleotide in a position of any of (1) to (28) of claim 1, or a nucleotide in the complementary strand composing a base pair with the nucleotide at the position, and
 - (c) determining the nucleotide sequence of the amplified DNA.
4. (Currently amended) The method of claim 1 ~~or 2~~, comprising the following steps (a) to (d):
 - (a) preparing DNA from a test rice,
 - (b) digesting the prepared DNA with a restriction enzyme,
 - (c) fractionating the DNA fragments by size, and
 - (d) comparing the size of the detected DNA fragment with a control.
5. (Currently amended) The method of claim 1 ~~or 2~~, comprising the following steps (a) to (e):
 - (a) preparing DNA from a test rice,
 - (b) amplifying a DNA comprising a nucleotide in a position of any of (1) to (28) of claim 1, or a nucleotide in the complementary strand composing a base pair with the nucleotide at the position,
 - (c) digesting the amplified DNA with a restriction enzyme,
 - (d) fractionating the DNA fragments by size, and
 - (e) comparing the size of the detected DNA fragment with a control.
6. (Currently amended) The method of claim 1 ~~or 2~~, comprising the following steps (a) to (e):

- (a) preparing DNA from a test rice,
 - (b) amplifying a DNA comprising a nucleotide in a position of any of (1) to (28) of claim 1, or a nucleotide in the complementary strand composing a base pair with the nucleotide at the position,
 - (c) denaturing the amplified DNA into single-stranded DNAs DNA,
 - (d) fractionating the denatured single-stranded DNA on a non-denaturing gel, and
 - (e) comparing the mobility of the fractionated single-stranded DNA on the gel with a control.
7. (Currently amended) The method of claim 1 ~~or 2~~, comprising the following steps (a) to (f):
- (a) preparing DNA from a test rice,
 - (b) synthesizing two different oligonucleotide probes labeled with a reporter fluorescence dye and quencher fluorescence dye, where an oligonucleotide is complementary to a proximal nucleotide sequence comprising a nucleotide in a position of any of (1) to (28) of claim 1, or a nucleotide in the complementary strand composing a base pair with the nucleotide at the position,
 - (c) hybridizing the DNA prepared in step (a) with the probe synthesized in step (b),
 - (d) amplifying a DNA comprising a nucleotide in a position of any of (1) to (28) of claim 1, or a nucleotide in the complementary strand composing a base pair with the nucleotide at the position,
 - (e) detecting the emission of reporter fluorescence, and
 - (f) comparing the emission of reporter fluorescence detected in step (e) with a control.
8. (Currently amended) The method of claim 1 ~~or 2~~, comprising the following steps (a) to (h):
- (a) preparing DNA from a test rice,
 - (b) synthesizing a probe in which a sequence complementary to the 3'-flanking nucleotide sequence comprising a nucleotide in a position of any of (1) to (28)

of claim 1, or a nucleotide in the complementary strand composing a base pair with the nucleotide at the position, is combined with a totally unrelated sequence,

- (c) synthesizing a probe that is complementary to the 5'-flanking region comprising a nucleotide in a position of any of (1) to (28) of claim 1, or a nucleotide in the complementary strand composing a base pair with the nucleotide at the position,
 - (d) hybridizing the probe synthesized in step (c) with the DNA prepared in step (a),
 - (e) digesting the hybridized DNA in step (d) with a single-stranded DNA cleaving enzyme, and dissociating a part of the probe synthesized in step (b),
 - (f) hybridizing the dissociated probe in step (e) with a probe for detection,
 - (g) enzymatically digesting the hybridized DNA in step (f), and measuring the fluorescence intensity thus generated, and
 - (h) comparing the fluorescence intensity measured in step (g) with a control.
9. (Currently amended) The method of claim 1 ~~or 2~~, comprising the following steps (a) to (f):
- (a) preparing DNA from a test rice,
 - (b) amplifying a DNA comprising a nucleotide in a position of any of (1) to (28) of claim 1, or a nucleotide in the complementary strand composing a base pair with the nucleotide at the position,
 - (c) denaturing the amplified DNA into single-stranded DNAs,
 - (d) separating only one strand from the denatured single-stranded DNAs,
 - (e) performing an elongation reaction from near a position of any of (1) to (28) of claim 1, or a nucleotide in the complementary strand composing a base pair with the nucleotide at the position, whereby the reaction elongates one nucleotide at a time, then enzymatically illuminating the generated pyrophosphate, and measuring the intensity of the illumination, and
 - (f) comparing the fluorescence intensity measured in step (e) with a control.

10. (Currently amended) The method of claim 1 ~~or 2~~, comprising the following steps (a) to (f):
- (a) preparing DNA from a test rice,
 - (b) amplifying a DNA comprising a nucleotide in a position of any of (1) to (28) of claim 1, or a nucleotide in the complementary strand composing a base pair with the nucleotide at the position,
 - (c) synthesizing a probe complementary to a nucleotide sequence comprising a sequence covering up to a nucleotide adjacent to a position of any of (1) to (28) of claim 1, or a nucleotide in the complementary strand composing a base pair with the nucleotide at the position,
 - (d) performing a single nucleotide extension reaction in the presence of fluorescently labeled nucleotides, using the DNA amplified in step (b) as a template, and the primer synthesized in step (c),
 - (e) measuring the fluorescence polarization, and
 - (f) comparing the fluorescence polarization measured in step (e) with a control.
11. (Currently amended) The method of claim 1 ~~or 2~~, comprising the following steps (a) to (f):
- (a) preparing DNA from a test rice,
 - (b) amplifying a DNA comprising a nucleotide in a position of any of (1) to (28) of claim 1, or a nucleotide in the complementary strand composing a base pair with the nucleotide at the position,
 - (c) synthesizing a primer complementary to a nucleotide sequence comprising a sequence covering up to the nucleotide adjacent to a position of any of (1) to (28) of claim 1, or a nucleotide in the complementary strand composing a base pair with the nucleotide at the position,
 - (d) performing a single nucleotide extension reaction in the presence of fluorescently labeled nucleotides, using the DNA amplified in step (b) as a template, and the primer synthesized in step (c),
 - (e) determining the nucleotide variety used in the reaction of step (d) using a sequencer, and
 - (f) comparing the nucleotide determined in step (e) with a control.

12. (Currently amended) The method of claim 1 ~~or 2~~, comprising the following steps (a) to (d):
 - (a) preparing DNA from a test rice,
 - (b) amplifying a DNA comprising a nucleotide in a position of any of (1) to (28) of claim 1, or a nucleotide in the complementary strand composing a base pair with the nucleotide at the position,
 - (c) measuring the molecular weight of the DNA amplified in step (b) using a mass spectrometer, and
 - (d) comparing the molecular weight measured in step (c) with a control.
13. (Currently amended) The method of claim 1 ~~or 2~~, comprising the following steps (a) to (f):
 - (a) preparing DNA from a test rice,
 - (b) amplifying a DNA comprising a nucleotide in a position of any of (1) to (28) of claim 1, or a nucleotide in the complementary strand composing a base pair with the nucleotide at the position,
 - (c) providing a substratum on which a nucleotide probe is immobilized,
 - (d) contacting the DNA of step (b) with the substratum of step (c),
 - (e) detecting the strength of hybridization between the DNA and the nucleotide probe immobilized on the substratum, and
 - (f) comparing the strength detected in step (e) with a control.
14. (Currently amended) The method of claim 1 ~~any of claims 1 to 13~~, further comprising the following steps (a) and (b):
 - (a) disrupting a rice seed in an alkaline aqueous solvent, and
 - (b) extracting rice genomic DNA from the seed disrupted in step (a).
15. (Original) The method of claim 14, wherein the rice seed is polished.
16. (Original) A primer for distinguishing between rice varieties, wherein the primer is
 - (a) an oligonucleotide for amplification of a DNA region comprising a nucleotide in a position of any of (1) to (28) of claim 1 in the rice genome, or a nucleotide

in the complementary strand composing a base pair with the nucleotide at the position, or

- (b) an oligonucleotide comprising a nucleotide sequence complementary to a sequence covering up to a nucleotide adjacent to a position of any of (1) to (28) of claim 1 in the rice genome, or a nucleotide in the complementary strand composing a base pair with the nucleotide at the position.
17. (Original) An oligonucleotide for distinguishing between rice varieties, wherein the oligonucleotide hybridizes with a DNA region comprising a nucleotide in a position of any of (1) to (28) of claim 1, or a nucleotide in the complementary strand composing a base pair with the nucleotide at the position, comprising at least 15 nucleotides.
18. (Currently amended) A kit for distinguishing between rice varieties, comprising the oligonucleotide of claim ~~16~~ or 17.
19. (Original) The kit of claim 18, further comprising an alkaline aqueous solvent.
20. (New) A kit for distinguishing between rice varieties, comprising the primer of claim 16.
21. (New) The kit of claim 20, further comprising an alkaline aqueous solvent.